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| 10/555,721 | 04/02/2007 | Christopher L. Bohler | GLOZ 2 00154 (I) | 9930 |
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| Fay Sharpe/LUMINATION LLC 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115-1843 | | | ZETTL, MARY E | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/555,721 | BOHLER ET AL. | |
| | Examiner | Art Unit | |
| | MARY ZETTL | 2875 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 24 March 2010.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,3,5,7,11-18,20,21 and 23-30 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,3,5,7,11-18,20,21 and 23-30 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 07 November 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Objections

Claim 25 is objected to because of the following informalities: “the light of a second wavelength” lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 14, 20, 21, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harbers (US 6,586,882 B1) in view of Bowman et al. (US 2003/0076051 A1) and further in view of Borner et al. (US 6,234,648 B1).

Regarding claims 1 and 2, Harbers teaches a light source comprising: a light engine for generating light of one of a plurality of wavelengths, the light engine including: a platform (portion upon which item 2 rests; Figure 1), and at least one LED (2) disposed on the platform (portion upon which item 2 rests; Figure 1); an enclosure (5) surrounding a light generating area of the light engine (Figure 1); a base (7) including a heat sink (col. 7, lines 5-8) for conducting thermal energy away from the at least one LED (2), into which heat sink the light engine is mounted (Figure 1); luminescent converting element (3) being adjacent to the at least one LED (2; Figure 1),

the luminescent converting element converting at least some of the received light to visible light (Abstract), and a luminescent converting element (3) .

Harbers does not disclose expressly conversion circuits for supplying electric power to the light engine.

Bowman et al. teaches an LED module including a conversion circuit for supplying electric power to the light engine (paragraph 7).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have provided a conversion circuit in the invention of Harbers as taught by Bowman et al. for the purpose of providing the desired voltage to the LEDs.

Harbers and Bowman do not disclose expressly the luminescent converting element being one of disposed on the enclosure and dispersed within the material forming the enclosure or both.

Borner et al. teaches an LED lighting system comprising at least one LED (6,7,8) disposed on a platform (5, Figure 1A) and a wavelength converting material (10, col. 5, lines 20-30) being one of disposed on the enclosure (3) and dispersed within the material forming the enclosure or both (Figure 1A).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers and Bowman by providing a wavelength conversion material on or within the material of the enclosure as taught by Borner et al. for the purpose of creating an aesthetically pleasing light out (typically white light with a high CRI).

Regarding claim 14, Harbers teaches the base (7) is adapted for mating with the light engine (LED driving section; Figure 1).

Regarding claim 20, Harbers teaches the enclosure (5) comprising a substantially elliptical shape (Figure 1).

Regarding claim 21, Harbers teaches the enclosure (5) comprising a substantially spherical shape (Figure 1).

Regarding claim 28, Harbers teaches the platform comprises a printed circuit board or a heat sink (col. 7, lines 5-8).

Regarding claim 29, Harbers teaches the base is a screw or a wedge base (7, Figure 1).

Regarding claim 30, Harbers teaches the light engine (including 2) is positioned at a peripheral of the enclosure (5, Figure 1).

Claims 3, 5, 7, and 9-13, are rejected under 35 U.S.C. 103(a) as being unpatentable over Harbers (US 6,586,882 B1) and Bowman et al. (US 2003/0076051 A1) and further in view of Borner et al. (US 6,234,648 B1) and Haitz (US 5,758,951 A).

Regarding claim 3, Harbers, Bowman et al., and Borner et al. do not disclose expressly a light guide.

Haitz teaches an LED illuminating source including LEDs (21-26) and a light guide (40) within an enclosure (Figure 3).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Bowman et al., and Borner such that a light guide as taught by Haitz was utilized to produce the desired lighting effect.

Regarding claim 5, Harbers teaches a light bulb including a wire (1 and 3) providing an appearance of a filament (Figure 1).

Harbers, Bowman et al., and Borner et al. do not disclose expressly a light guide.

Haitz teaches an LED illuminating source including LEDs (21-26) and a light guide (40) within an enclosure (Figure 3).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Bowman et al., and Borner et al. such that a light guide as taught by Haitz was utilized to produce the desired lighting effect.

Regarding claim 7, Harbers, Bowman et al., and Borner et al. do not disclose expressly a light guide comprising a reflector.

Haitz teaches a light guide (40) including a reflector (reflection due to refractive properties caused by different refractive indices of the material making up 40 and the material surrounding 40).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Bowman et al., and Borner et al. as taught by Haitz such that the light guide comprised a reflector in order to increase the light output.

Regarding claim 11, Harbers teaches the luminescent converting element (3) including a transparent phosphor (col. 2, lines 34-36).

Regarding claim 12, Harbers teaches the transparent phosphor comprises one of: an organic phosphor, an organic complex of a rare earth metal, a nanophosphor, and a quantum dot phosphor (col. 2, lines 34-36).

Regarding claim 13, Harbers teaches a light source further comprising: one of an index matching material and a lensing material (5) encompassing the at least one LED (Figure 5).

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harbers (US 6,586,882 B1) and Bowman et al. (US 2003/0076051 A1) and further in view of Borner et al. (US 6,234,648 B1) and Stopa (US 2003/0156416 A1).

Regarding claim 15, Harbers, Bowman et al., and Borner et al. do not disclose expressly the heat sink comprising a slug inserted into the base.

Stopa teaches an LED lighting device including a heat sink (50, Figure 1) comprising a slug (49, Figure 9A; paragraph 41) for conducting energy away from the LED (42).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Bowman et al., and Borner et al. such that a slug as taught by Stopa was included for the purpose of conducting heat away from the LED and electrical components for the purpose of preventing overheating which would otherwise shorten the life of the LED.

Regarding claim 16, Harbers, Bowman et al., and Borner et al. do not disclose expressly a plurality of fins.

Stopa teaches a plurality of fins (on the bottom of 50, Figure 1).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Bowman et al., and Borner et al. such that a fins as taught by Stopa was included for the purpose of conducting heat away from the LED and electrical components for the purpose of preventing overheating which would otherwise shorten the life of the LED.

Regarding claim 17, Harbers, Bowman et al., and Borner et al. do not disclose expressly fins.

Stopa teaches a plurality of fins (on the bottom of 50, Figure 1).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Bowman et al., and Borner et al. such that a fins as taught by Stopa were included for the purpose of conducting heat away from the LED and electrical components for the purpose of preventing overheating which would otherwise shorten the life of the LED. It would have followed that in arranging the fins, they should follow the shape of the enclosure of Harbers and thus be provided in radial manner.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harbers (US 6,586,882 B1) and Bowman et al. (US 2003/0076051 A1) and further in view of Borner et al. (US 6,234,648 B1) and Tseng et al. (US 2004/0105262 A1).

Regarding claim 18, Harbers, Bowman et al., and Borner et al. do not disclose expressly the conversion circuit comprising an AC to DC converter.

Tseng et al. teaches a light engine for generating light of one of a plurality of wavelengths, the light engine including: a platform, and at least one LED (20), an enclosure, and a light guide (253) within the enclosure, and a AC to DC converter (paragraph 17).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Bowman et al., and Borner et al. et al. such that an AC to DC converter was provided as taught by Tseng

such that the LEDs which are DC based could be powered by a traditional AC power supply.

Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harbers (US 6,586,882 B1) in view of Borner et al. (US 6,234,648 B1) and further in view of Brittell (US 5,749,646 A).

Regarding claim 23, Harbers discloses a modular adaptable (capable of being adapted) LED lighting system comprising: screw base module (7; Figure 1); at least two light modules (2 and 1,3) having different light emission characteristics, each light module including: a platform (portion upon which the LEDs rest) which is adapted for mating with the base module (Figure 1), and at least one LED (2) disposed on the platform for generating light in a range from UV to infrared wavelengths (Abstract); an enclosure (5), which surrounds the light produced by the light module such that at least a portion of the light is transmitted through the enclosure; and a power module for energizing the at least one LED (necessary to cause the illumination effects described in the Abstract).

Harbers does not disclose expressly a wavelength converting material being one of disposed on the enclosure and dispersed within the material forming the enclosure or both.

Borner et al. teaches an LED lighting system comprising at least one LED (6,7,8) disposed on a platform (5, Figure 1A) and a wavelength converting material (10, col. 5,

lines 20-30) being one of disposed on the enclosure (3) and dispersed within the material forming the enclosure or both (Figure 1A).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers by providing a wavelength conversion material on or within the material of the enclosure as taught by Borner et al. for the purpose of creating an aesthetically pleasing light out (typically white light with a high CRI).

Harbers and Borner et al. both teach material encompassing the at least one LED (5 and 3, respectively). However, neither Harbers nor Borner et al. disclose the material being an index matching material.

Brittell teaches an illumination device including an index matching material (72, Figure 10; col. 8, lines 34-45) encompassing the light sources (52, Figure 11A).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have ensured that the material encompassing the light sources of Harbers and Borner et al. was an index matching material as taught by Brittell for the purpose of ensuring efficient light extraction.

Regarding claim 24, Harbers discloses the base module (7) is one of a screw base or a wedge base (Figure 1).

Regarding claim 25, although "the light of a second wavelength" has not been established it is assumed that this refers to the light that is emitted from the illumination

device. Harbers (col. 5, line 32), Borner (Abstract), and Brittell (Abstract) all teach visible light being emitted from their respective devices.

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harbers (US 6,586,882 B1) in view of Borner et al. (US 6,234,648 B1) and further in view of Brittell (US 5,749,646 A) and Cao (US 6,746,885 B1).

Regarding claims 26 and 27, Harbers, Borner et al., and Brittell do not teach an active cooling device.

Cao teaches an active cooling device (407, Figure 6) being an electric fan (col. 7, lines 30-40).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Harbers, Borner et al., and Brittell by including a fan as taught by Cao for the purpose of preventing device overheating, which could cause device failure or a shortened lifespan for the device.

Response to Arguments

Applicant's arguments with respect to claims 1, 3, 5, 7, 11-18, 20, 21, and 23-30 have been considered but have either not been found to be persuasive or are moot in view of the new ground(s) of rejection.

On page 8, the applicant has argued that Bowman is not considered relevant art. The examiner disagrees and notes that both inventions are directed to illumination device utilizing LED light sources and therefore both inventions are in the same LED

illumination field. Furthermore, while Bowman does teach a DC power source, Harbers does not teach against a DC power source.

Further on page 8, the applicant has argued that the combination of Bowman and Tseng is improper. The examiner disagrees and notes that not only is the use of either an AC or DC power source well known, but the use of a conversion circuit so that the supplied voltage matches the system voltage is well known and obvious for the purpose of preventing component damage.

In the last paragraph on page 8, the applicant has argued that "the envelope of Harbers cannot teach to both the claimed enclosure and index matching/lensing material, since the features are two separate elements." The examiner however notes that claim 13 includes the language "one of" and therefore it is not necessary for the prior art to include both inventive features and that the argument in regard claim 23 is moot in view of new grounds of rejection necessitated by the amendment. Furthermore, regarding claim 23, there is nothing that disqualifies the wavelength converting material and the index matching material being on and the same.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Zettl whose telephone number is 571-272-6007. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandy O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sandra L. O'Shea/
Supervisory Patent Examiner, Art Unit 2875

MZ
/Mary Zettl/